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EXAMINER

WILLIAMS, CLAYTON R

ART UNIT	PAPER NUMBER
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2157

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/804,724	Applicant(s) ROLIA ET AL.	
	Examiner Clayton R. Williams	Art Unit 2157	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-30 are pending in this application, of which claims 1, 15, 29 and 30 have been amended and claims 13 and 27 cancelled.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-12, 15-26, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shahabuddin et al., US 6,877,035 (hereinafter Shahabuddin), in view of Berger et al., US 5,274,644 (hereinafter Berger).

For claim 1, Shahabuddin discloses:

A method of policing resources in a computing utility facility (col. 4, lines 51-53), comprising:

intercepting a request for resources from an application admitted to access a pool of resources associated with the computing utility facility (col. 5, lines 22-28);

acquiring an entitlement profile associated with the application to determine if application is entitled to requested resources over a time period (col. 7, lines 40-44, the monitoring system acquires and constantly updates a profile of client behavior; col. 7, lines 58-63, monitoring system provides information to decision support system);

identifying an entitlement value and corresponding sliding window of the time period from the entitlement profile (col. 7, lines 49-50);

determining if the request for resources exceeds the entitlement value associated with the sliding window (col. 7, lines 47-49); and

indicating application entitlement to the request for resources in response to the determining if the request is excessive (col. 10, lines 9-14, disclosure of system continually updating resource utilization history of client and making resource adjustments accordingly; col. 10, lines 23-25, disclosure of this check on a system-wide basis for all clients).

Shahabuddin fails to explicitly disclose limitation 1 intercepting an “advance” request, nor does it disclose this interception occurring “prior to utilization of the pool of resources to execute the application”. Moreover, Shahabuddin fails to explicitly disclose limitation 5 “including a throttling of the requested resources when the application is not entitled to the additional resources in accordance with the entitlement profile.

However, Berger discloses a method whereby customers’ requests for computing resources pass through a “throttle” system which determines whether the request will be satisfied at the rate specified by customer request (col. 5, lines 17-32). Moreover, Berger teaches that throttle has stored in server memory the criteria for the computing

resources to which each customer is entitled (col. 5, lines 45-52). Shahabuddin and Berger are analogous art because they are from the same field of endeavor of allocating computing resources to clients on a prioritized basis.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the method and computer program product for allocating computing resources as described by Shahabuddin to include a method and computer program product that includes adjusting priorities to clients based on predefined resource agreements because Dan teaches that sharing resources effectively can result in better overall utilization of computing resources (Dan, [0009], lines 3-5).

For claim 2, the combination of Shahabuddin and Berger discloses:

The method of claim 1 (see rejection above) further comprising:

acquiring additional sliding windows and corresponding additional entitlement values to determine if the request for resources exceeds at least one entitlement value and sliding window combination (Shahabuddin, col. 5, lines 59-67, a client can be guaranteed at least two types of resource allocation: a guaranteed minimum level of service and more than minimum amount of guaranteed service within a certain probability; Shahabuddin, col. 6, lines 21-24, past client behavior can be modeled for periods other than 24-hr windows; Shahabuddin, col. 7, lines 40-44 and 58-63); and

indicating that the application is not entitled to the requested resources when the request exceeds the entitlement value in at least one entitlement value and sliding window combination (Shahabuddin, col. 7, lines 47-49).

For claim 3, the combination of Shahabuddin and Berger discloses:

The method of claim 1 (see rejection above) wherein the entitlement profile associated with the application describes the burstiness of the application over the time period (Shahabuddin, col. 5, lines 31-32, and col. 6, lines 10-15 and 21-24, disclosure of method of modeling behavior of clients using different time resolutions and observations of periodic behavior, i.e. burstiness of behavior).

For claim 4, the combination of Shahabuddin and Berger discloses:

The method of claim 1 (see rejection above) wherein a burst loading factor associated with each sliding window corresponds to the burstiness of the application and identifies a portion of an aggregate entitlement to the resources available to fulfill the request (Shahabuddin, col. 5, lines 31-32, col. 6, lines 10-15 and col. 6, lines 21-24, disclosure of information constituting patterns of behavior being incorporated into utilization database of client behavior).

For claim 5, the combination of Shahabuddin and Berger discloses:

The method of claim 4 (see rejection above) wherein a larger burst loading factor is associated with more bursty applications that may need resources more rapidly compared with a smaller burst loading factor is associated with applications that may not need resources as rapidly (Shahabuddin, col. 5, lines 31-32 and col. 6, lines 10-15 and 21-24).

For claim 6, the combination of Shahabuddin and Berger discloses:

The method of claim 1 (see rejection above) wherein the entitlement value is derived from historical trace information collected while the application is using resources (Shahabuddin, col. 7, lines 40-44, the monitoring system acquires and constantly updates a profile of client behavior; Shahabuddin, col. 7, lines 58-63, monitoring system provides information to decision support system).

For claim 7, the combination of Shahabuddin and Berger discloses:

The method of claim 1 (see rejection above) wherein the burst loading factor is derived from the historical trace information collected while the application is using resources (Shahabuddin, col. 7, lines 40-44; col. 7, lines 58-63).

For claim 8, the combination of Shahabuddin and Berger discloses:

The method of claim 3 (see rejection above) wherein the resource usage is determined according to an estimated probability mass function (Shahabuddin, col. 6, lines 10-16; Rolia et al., Pub. No. 2004/0128384, [0011] further defines a PMF as being akin to table described in Shahabuddin).

For claim 9, the combination of Shahabuddin and Berger discloses:

The method of claim 4 (see rejection above) wherein the estimated probability mass function further includes a confidence interval corresponding to a sample size

used for determining the estimated probability mass function (Shahabuddin, col. 6, lines 35-49, disclosed probability equations and alpha-satisfiability measure read on confidence interval).

For claim 10, the combination of Shahabuddin and Berger discloses:

The method of claim 1 (see rejection above) wherein the entitlement value operates as a metric for determining whether an application is entitled to the requested resources (Shahabuddin, col. 7, lines 47-49, the decision support system takes input from monitoring system produced database model and service level agreements to make decisions regarding allocation of resources).

For claim 11, the combination of Shahabuddin and Berger discloses:

The method of claim 10 (see rejection above) wherein the entitlement value for an application is proportional to the burstiness of the application in view of resource usage derived from historical trace data (Shahabuddin, col. 7, lines 40-44; col. 7, lines 58-63).

For claim 12, the combination of Shahabuddin and Berger discloses:

The method of claim 1 (see rejection above) wherein determining if the request for resources exceeds the entitlement value further depends on a confidence interval associated with the entitlement value and the number of sample values used to identify the entitlement value (Shahabuddin, col. 7, lines 40-44 and 58-63, disclosure of system

that obtains utilization patterns and makes recommendations to adjust resources allocated to client; Shahabuddin, col. 6, lines 10-15 and 35-49, disclosure of utilization patterns having confidence interval bounds and accuracy based on number of data samples taken to construct model).

For claim 15, Shahabuddin discloses:

An apparatus for policing resources in a computing utility facility (col. 4, lines 51-53), comprising:

a processor capable of executing instructions (col. 10, lines 55-58);

a memory containing instructions when executed (col. 11, lines 22-23) cause the processor to intercept a request for resources from an application admitted to access a pool of resources associated with the computing utility facility (col. 5, lines 22-28), acquire an entitlement profile associated with the application to determine if application is entitled to requested resources over a time period (col. 7, lines 40-44; col. 7, lines 58-63), identify an entitlement value and corresponding sliding window of the time period from the entitlement profile (col. 7, lines 49-50), determine if the request for resources exceeds the entitlement value associated with the sliding window (col. 7, lines 47-49), and indicate application entitlement to the request for resources in response to the determining if the request is excessive (col. 10, lines 9-14; col. 10, lines 23-25).

Shahabuddin fails to explicitly disclose the limitations intercepting an “advance” request, nor does it disclose this interception occurring “prior to utilization of the pool of resources to execute the application”. Moreover, Shahabuddin fails to explicitly disclose

limitation 5 “including a throttling of the requested resources when the application is not entitled to the additional resources in accordance with the entitlement profile.

However, Berger discloses a method whereby customers’ requests for computing resources pass through a “throttle” system which determines whether the request will be satisfied at the rate specified by customer request (col. 5, lines 17-32). Moreover, Berger teaches that throttle has stored in server memory the criteria for the computing resources to which each customer is entitled (col. 5, lines 45-52). Shahabuddin and Berger are analogous art because they are from the same field of endeavor of allocating computing resources to clients on a prioritized basis.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the method and computer program product for allocating computing resources as described by Shahabuddin to include a method and computer program product that includes adjusting priorities to clients based on predefined resource agreements because Dan teaches that sharing resources effectively can result in better overall utilization of computing resources (Dan, [0009], lines 3-5).

For claim 16, the combination of Shahabuddin and Berger discloses:

The apparatus of claim 15 further comprising instructions when executed that, acquire additional sliding windows and corresponding additional entitlement values to determine if the request for resources exceeds at least one entitlement value and sliding window combination (Shahabuddin, col. 5, lines 59-67; col. 6, lines 21-24; col. 7, lines 40-44 and 58-63) and,

indicate that the application is not entitled to the requested resources when the request exceeds the entitlement value in at least one entitlement value and sliding window combination (Shahabuddin, col. 7, lines 47-49).

For claim 17, the combination of Shahabuddin and Berger discloses:

The apparatus of claim 15 (see rejection above) wherein the entitlement profile associated with the application describes the burstiness of the application over the time period (Shahabuddin, col. 5, lines 31-32 and col. 6, lines 10-15 and 21-24).

For claim 18, the combination of Shahabuddin and Berger discloses:

The apparatus of claim 15 (see rejection above) wherein a burst loading factor associated with each sliding window corresponds to the burstiness of the application and identifies a portion of an aggregate entitlement to the resources available to fulfill the request (Shahabuddin, col. 5, lines 31-32 and col. 6, lines 10-15 and 21-24).

For claim 19, the combination of Shahabuddin and Berger:

The apparatus of claim 18 (see rejection above) wherein a larger burst loading factor is associated with more bursty applications that may need resources more rapidly compared with a smaller burst loading factor is associated with applications that may not need resources as rapidly (Shahabuddin, col. 5, lines 31-32 and col. 6, lines 10-15 and 21-24).

For claim 20, the combination of Shahabuddin and Berger discloses:

The apparatus of claim 15 (see rejection above) wherein the entitlement value is derived from historical trace information collected while the application is using resources (Shahabuddin, col. 7, lines 40-44; col. 7, lines 58-63).

For claim 21, the combination of Shahabuddin and Berger discloses:

The apparatus of claim 15 (see rejection above) wherein the burst loading factor is derived from the historical trace information collected while the application is using resources (Shahabuddin, col. 7, lines 40-44; col. 7, lines 58-63).

For claim 22, the combination of Shahabuddin and Berger discloses:

The apparatus of claim 17 (see rejection above) wherein the resource usage is determined according to an estimated probability mass function (Shahabuddin, col. 6, lines 10-16).

For claim 23, the combination of Shahabuddin and Berger discloses:

The apparatus of claim 18 (see rejection above) wherein the estimated probability mass function further includes a confidence interval corresponding to a sample size used for determining the estimated probability mass function (Shahabuddin, col. 6, lines 35-49).

For claim 24, the combination of Shahabuddin and Berger discloses:

The apparatus of claim 15 (see rejection above) wherein the entitlement value operates as a metric for determining whether an application is entitled to the requested resources (Shahabuddin, col. 7, lines 47-49).

For claim 25, the combination of Shahabuddin and Berger discloses:

The apparatus of claim 24 (see rejection above) wherein the entitlement value for an application is proportional to the burstiness of the application in view of resource usage derived from historical trace data (Shahabuddin, col. 7, lines 40-44; col. 7, lines 58-63).

For claim 26, the combination of Shahabuddin and Berger discloses:

The apparatus of claim 15 (see rejection above) wherein determining if the request for resources exceeds the entitlement value further depends on a confidence interval associated with the entitlement value and the number of sample values used to identify the entitlement value (Shahabuddin, col. 7, lines 40-44 and 58-63; col. 6, lines 10-15 and 35-49).

For claim 29, Shahabuddin discloses:

A computer program product for policing resources in a computing utility facility (col. 4, lines 51-53), comprising instructions operable to cause a programmable processor to:

intercept a request for resources from an application admitted to access a pool of resources associated with the computing utility facility (col. 5, lines 22-28);

acquire an entitlement profile associated with the application to determine if application is entitled to requested resources over a time period (col. 7, lines 40-44; col. 7, lines 58-63);

identify an entitlement value and corresponding sliding window of the time period from the entitlement profile (col. 7, lines 49-50);

determine if the request for resources exceeds the entitlement value associated with the sliding window (col. 7, lines 47-49); and

indicate application entitlement to the request for resources in response to the determining if the request is excessive (col. 10, lines 9-14; col. 10, lines 23-25; Fig. 3).

Shahabuddin fails to explicitly disclose the limitations intercepting an “advance” request, nor does it disclose this interception occurring “prior to utilization of the pool of resources to execute the application”. Moreover, Shahabuddin fails to explicitly disclose limitation 5 “including a throttling of the requested resources when the application is not entitled to the additional resources in accordance with the entitlement profile.

However, Berger discloses a method whereby customers’ requests for computing resources pass through a “throttle” system which determines whether the request will be satisfied at the rate specified by customer request (col. 5, lines 17-32). Moreover, Berger teaches that throttle has stored in server memory the criteria for the computing resources to which each customer is entitled (col. 5, lines 45-52). Shahabuddin and

Berger are analogous art because they are from the same field of endeavor of allocating computing resources to clients on a prioritized basis.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the method and computer program product for allocating computing resources as described by Shahabuddin to include a method and computer program product that includes adjusting priorities to clients based on predefined resource agreements because Dan teaches that sharing resources effectively can result in better overall utilization of computing resources (Dan, [0009], lines 3-5).

For claim 30, Shahabuddin discloses:

An apparatus for policing resources in a computing utility facility (col. 4, lines 51-53), comprising:

means for intercepting a request for resources from an application admitted to access a pool of resources associated with the computing utility facility (col. 5, lines 22-28);

means for acquiring an entitlement profile associated with the application to determine if application is entitled to requested resources over a time period (col. 7, lines 40-44; col. 7, lines 58-63);

means for identifying an entitlement value and corresponding sliding window of the time period from the entitlement profile (col. 7, lines 49-50);

means for determining if the request for resources exceeds the entitlement value associated with the sliding window (col. 7, lines 47-49); and

means for indicating application entitlement to the request for resources in response to the determining if the request is excessive (col. 10, lines 9-14; col. 10, lines 23-25).

Shahabuddin fails to explicitly disclose the limitations intercepting an “advance” request, nor does it disclose this interception occurring “prior to utilization of the pool of resources to execute the application”. Moreover, Shahabuddin fails to explicitly disclose limitation 5 “including a throttling of the requested resources when the application is not entitled to the additional resources in accordance with the entitlement profile.

However, Berger discloses a method whereby customers’ requests for computing resources pass through a “throttle” system which determines whether the request will be satisfied at the rate specified by customer request (col. 5, lines 17-32). Moreover, Berger teaches that throttle has stored in server memory the criteria for the computing resources to which each customer is entitled (col. 5, lines 45-52). Shahabuddin and Berger are analogous art because they are from the same field of endeavor of allocating computing resources to clients on a prioritized basis.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the method and computer program product for allocating computing resources as described by Shahabuddin to include a method and computer program product that includes adjusting priorities to clients based on predefined resource agreements because Dan teaches that sharing resources effectively can result in better overall utilization of computing resources (Dan, [0009], lines 3-5).

5. Claims 14 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shahabuddin, as applied to claims 1 and 15, in view of Berger, and further in view of Dan et. al, Pub. No. US 2005/0165925 (hereinafter Dan).

For claim 14, the combination of Shahabuddin and Berger fails to explicitly disclose wherein indicating application entitlement includes clawing back resources already allocated to the application when the application has exceeded a time limit for using the allocated resources.

However, Dan discloses a service level agreement monitor continually monitoring whether the system is meeting or will meet service level based on established priorities for the running clients. Given this information, a planning monitor has authority to make adjustments (more or less resources) to running clients ([0053] and [0054]). The combination of Shahabuddin and Berger and Dan are analogous art because all are from the same field of endeavor of allocating computing resources to clients on a prioritized basis.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the method and computer program product for allocating computing resources as described by the combination of Shahabuddin and Berger to include a method and computer program product that includes adjusting priorities to clients based on predefined service agreements because Dan teaches that sharing resources effectively can result in better overall utilization of computing resources (Dan, [0009], lines 3-5).

For claim 28, the combination of Shahabuddin and Berger fails to explicitly disclose wherein indicating application entitlement further includes instructions when executed that claw back resources already allocated to the application when the application has exceeded a time limit for using the allocated resources.

However, Dan discloses a service level agreement monitor continually monitoring whether the system is meeting or will meet service level based on established priorities for the running clients. Given this information, a planning monitor has authority to make adjustments (more or less resources) to running clients ([0053] and [0054]). The combination of Shahabuddin and Berger and Dan are analogous art because all are from the same field of endeavor of allocating computing resources to clients on a prioritized basis.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the method and computer program product for allocating computing resources as described by the combination of Shahabuddin and Berger to include a method and computer program product that includes adjusting priorities to clients based on predefined service agreements because Dan teaches that sharing resources effectively can result in better overall utilization of computing resources (Dan, [0009], lines 3-5).

Response to Arguments

6. Applicant's arguments regarding deficiencies in the prior art cited in the first Office Action, as pertains to the claims presented as amended, have been fully considered but are moot in view of new grounds of rejection. Berger, in combination with the previously cited prior art, fully teaches the claims as amended.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clayton R. Williams whose telephone number is 571-270-3801. The examiner can normally be reached on M-F (8 a.m. - 5 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on 571-272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CRW

/Ario Etienne/
Supervisory Patent Examiner, Art Unit 2157